WE CLAIM:

1   1.   A method of dynamic measurement of a communication channel using Direct Sequence

2   Spread Spectrum (DSSS) communication system, comprising the steps of:

3   (a)   generating a Pseudo Noise (PN) code where $(\gamma_0 = 1/T)$;

4   (b)   modulating a carrier (cos. $2\Sigma\gamma_c$) with the PN code;

5   (c)   providing the PN coded data signal [s (t)] to a correlator via a communication

6 channel that includes a channel noise signal for determining transmission characteristics of the

7 channel; and

8   (d)   determining a correlator value for extracting the PN code from the coded data

9 signal, where the correlator value is the wanted exact measure of the loss of the channel under

10 test.

1   2.   The method of Claim 1 further comprising the steps of:

2   (e)   selecting a Signal to Noise Ratio as a threshold for reliable communication in the

3 channel;

4   (f)   comparing the correlation value to this threshold; and

5   (g)   determining if the correlation value is above or below the threshold, where a

6 correlation value below the threshold is indicative of unreliable transmission trough the channel.

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1 3. The method of Claim 1 and 2 further comprising the steps of:

2   (h) adjusting the frequency of the carrier to frequencies relevant for the transmission

3 of the data information content; and

4   (i) and measuring the correlation value for each carrier frequency, where the

5 correlation value vs. frequency is a measure for the frequency dependent loss of the channel.

1 4. The method of Claim 1 further comprising the steps of:

2   (j) adjusting the power level of the data to compensate for attenuation of the

3 transmitted data.

1 5. The method of Claim 1 further comprising the step of:

2   (k) altering the correlation value by adjusting the PN code rate (γ_0) or the carrier

3 frequency (γ_c).

1 6. The method of Claim 1 further comprising the step of:

2   (l) adjusting the length of the PN code sequence to compensate for a noisy

3 environment.

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1   7.   The method of Claim 1 further comprising the step of modulating the PN sequence and/or

2   the carrier and/or the PN modulated carrier with a data signal [m (t)].

1 · 8.   The method of Claim 1 further comprising the step of:

2   (m)   determining the presence of an unreliable data transmission where the

3   predetermined maximum PN code length does not exceed the threshold value.

1   9.   A system of dynamic measurement of a communication channel using Direct Sequence

2   Spread Spectrum (DSSS) communication system, comprising:

3   (a)   code generating apparatus which generates a Pseudo Noise (PN) code where (γ_0

4   =1/T);

5   (b)   carrier modulating apparatus which modulates a carrier (cos. $2\Sigma\gamma_c$) with the PN

6   code;

7   (c)   data modulating apparatus which modulates the PN coded carrier with a data

8   signal [m (t)];

9   (d)   transmitter apparatus which transmits the PN coded data signal [s (t)] to a

10   correlator via a communication channel for determining transmission characteristics of the

11   channel;

12   (e)   frequency-controlling apparatus that tunes the carrier frequency to predetermined

13   frequencies relevant for the transmission of the data content;

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14   (f)   decoding apparatus which determines a correlator value for each frequency for

15   extracting the PN code from the coded data signal; and

16   (g)   analysis apparatus which keeps track of the correlator values and thereby

17   determines the frequency dependent loss of the transmission channel.

1   10.   A system of dynamic measurement of a communication channel using Direct Sequence

2   Spread Spectrum (DSSS) communication system, comprising:

3   (a)   code generating apparatus which generates a Pseudo Noise (PN) code where (γ_0

4   =1/T);

5   (b)   carrier modulating apparatus which modulates a carrier (cos. $2\Sigma\gamma_c$) with the PN

6   code;

7   (c)   data modulating apparatus which modulates the PN coded carrier with a data

8   signal [m (t)];

9   (d)   transmitter apparatus which transmits the PN coded data signal [s (t)] to a

10   correlator via a communication channel for determining transmission characteristics of the

11   channel;

12   (e)   selecting apparatus which select a Signal to Noise Ratio as a threshold for reliable

13   communication in the channel;

14   (f)   decoding apparatus which determines a correlator value for extracting the PN

15   code from the coded data signal;

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16   (g)   comparison apparatus which compares the correlation value of the PN code to the

17   threshold value; and

18   (h)   analysis apparatus which determines if the correlation variable is above or below

19   the threshold; where a correlation value below the threshold is indicative of unreliable

20   transmission through the channel and a correlator value above the threshold is indicative or

21   reliable transmission through the channel.

1   11.   A method of dynamic measurement of a communication channel using Direct Sequence

2   Spread Spectrum (DSSS) communication system, comprising the steps of:

3   (a)   generating a Pseudo Noise (PN) code where ($\gamma_0 = 1/T$);

4   (b)   modulating a carrier (cos. $2\Sigma\gamma_c$) with the PN code;

5   (c)   modulating the PN coded carrier with a data signal [m (t)];

6   (d)   providing the PN coded data signal [s (t)] plus a channel noise signal to a

7   correlator via a communication channel for determining transmission characteristics of the

8   channel;

9   (e)   selecting a Signal to Noise Ratio as a threshold for reliable communication in the

10   channel;

11   (f)   determining a correlator value for extracting the PN code from the coded data

12   signal;

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13   (g)   comparing the correlation value of the PN code to the threshold value; and

14   (h)   determining if the correlation variable is above or below the threshold;

15   where a correlation value below the threshold is indicative of unreliable transmission

16   through the channel and a correlator value above the threshold is indicative or reliable

17   transmission through the channel.

1   12.   The method of Claim 11 further comprising the steps of:

2   (i)   adjusting the power level of the data to compensate for attenuation of the

3   transmitted data.

1   13.   The method of Claim 11 further comprising the step of:

2   (j)   altering the correlation value by adjusting the PN code rate (γ_0) or the carrier

3   frequency (γ_c).

1   14.   The method of Claim 11 further comprising the step of:

2   (k)   adjusting the length of the PN code sequence to compensate for a noisy

3   environment.

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1 15. The method of Claim 11 further comprising the step of:

2   (l) determining the presence of an unreliable data transmission where the

3 predetermined maximum PN code length does not exceed the threshold value.

1 16. A system of dynamic measurement of a communication channel using Direct Sequence

2 Spread Spectrum (DSSS) communication system, comprising:

3   (a) code generating apparatus which generates a Pseudo Noise (PN) code where (γ_0

4 =1/T);

5   (b) carrier modulating apparatus which modulates a carrier (cos. $2\Sigma\gamma_c$) with the PN

6 code;

7   (c) data modulating apparatus which modulates the PN coded carrier with a data

8 signal [m (t)];

9   (d) transmitter apparatus which transmits the PN coded data signal [s (t)] to a

10 correlator via a communication channel for determining transmission characteristics of the

11 channel;

12   (e) selecting apparatus which select a Signal to Noise Ratio as a threshold for reliable

13 communication in the channel;

14   (f) decoding apparatus which determines a correlator value for extracting the PN

15 code from the coded data signal;

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1   18.   The medium of Claim 17 further comprising

2   (e)   program instructions selecting a Signal to Noise Ratio as a threshold for reliable

3   communication in the channel;

4   (f)   program instructions comparing the correlation value to this threshold; and

5   (g)   program instructions determining if the correlation value is above or below the

6   threshold, where a correlation value below the threshold is indicative of unreliable transmission

7   trough the channel.

1   19.   The medium of Claim 17 and 18 further comprising:

2   (h)   program instructions adjusting the frequency of the carrier to frequencies relevant

3   for the transmission of the data information content; and

4   (i)   program instructions measuring the correlation value for each carrier frequency,

5   where the correlation value vs. frequency is a measure for the frequency dependent loss of the

6   channel.

1   20.   The medium of Claim 17 further comprising:

2   (j)   program instructions adjusting the power level of the data to compensate for

3   attenuation of the transmitted data.

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1 2{o} The medium of Claim 17 further comprising:

2   (k) program instructions altering the correlation value by adjusting the PN code rate

3 (γ_0) or the carrier frequency (γ_c).

1 22. The medium of Claim 17 further comprising:

2   (l) program instructions adjusting the length of the PN code sequence to compensate

3 for a noisy environment.

1 23. The medium of Claim 17 further comprising:

2   (m) program instructions modulating the PN sequence and/or the carrier and/or the PN

3 modulated carrier with a data signal [m (t)].

1 24. The medium of Claim 17 further comprising:

2   (n) program instructions determining the presence of an unreliable data transmission

3 where the predetermined maximum PN code length does not exceed the threshold value.